

REMARKS

The Examiner mailed a non-final Office Action dated October 15, 2008 to the Applicant. Claims 1-6 were pending in the application. Claims 1-6 were rejected by the Examiner. The Applicant hereby amends Claims 1-3 and 5-6 and cancels Claim 4 which is incorporated into Claim 1. Therefore, the Applicant submits that based upon the amendments and remarks, Claims 1-3 and 5-6 are in condition for allowance.

Claim Objections

The Examiner has objected to Claims 1-6 are objected to because of the informalities cited in the present Office Action. The Applicant has amended Claims 1-3 and 5-6 in accordance with the Examiner's suggestions in the present Office Action. Claim 4 is cancelled. Therefore, the Applicant request that objection be withdrawn and that Claims 1-3 and 5-6 are in condition for allowance.

Claim Rejections Under 35 U.S.C. §102(b)

The Examiner has rejected Claim 1 on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claim 1 of Kim et al. (U.S. Patent No. 7,151,071 issued December 19, 2006). To overcome this rejection, the Applicant hereby submits a terminal disclaimer and fee for terminal disclaimer as the present application and Kim are commonly owned. Please be aware that Samsung Atofina has changed its name to Samsung Total Petrochemicals. A copy of the official papers recognizing this name change are enclosed with this response.

The Examiner has also rejected Claims 1-6 as being unpatentable over Yang (U.S. Patent No. 6,034,025) under 35 U.S.C. 102(b). Note, the Applicant hereby amends Claim 1 to incorporate dependent Claim 4 and cancel Claim 4. The Applicant respectfully disagrees with this rejection for the following reasons.

(1) Features of the present invention

The preparation method for a solid titanium catalyst of the present invention comprises the steps of (1) preparing a magnesium compound solution, (2) preparing a carrier by adding firstly a titanium halide compound to the magnesium compound solution at low temperature, elevating the temperature of the resulted solution or aging it, and then thereto adding secondly the titanium halide compound additionally; (3) preparing a titanium catalyst by reacting the carrier with a titanium compound and an electron donor; and (4) washing the titanium catalyst with hydrocarbon solvent at high temperature.

In the step (2) of preparing a carrier, the present invention features in that a titanium halide compound is firstly added to the magnesium compound solution at relatively low temperature (-10-30 degrees C) with specific range of molar ratio (titanium halide compound: mixed solvent = 1:3-1:10) and, after carrier particles are generated by elevating the temperature of the resulted solution or aging it, a titanium halide compound is added secondly.

However, Yang et al., unlike the present invention, only discloses a construction of preparing the carrier in one step, wherein a titanium halide reaction is performed only once in step (2). (Publication of Yang et al., page 7, “example 1 step (ii), and does not disclose any construction that prepares a carrier by secondly adding a titanium halide after firstly adding a titanium halide to the magnesium compound solution.

In other words, the reason a carrier is prepared by secondly adding a titanium halide after firstly adding a titanium halide to the magnesium compound solution in step (2) is to obtain a catalyst having improved bulk regularity, and thereby the object of the present invention of preparing an olefin polymer having wide distribution of molecular weight is achieved.

For this purpose, in the present invention, the “adding temperature” in the first addition of a titanium halide to the magnesium compound solution in step (2) for preparing a carrier is adjusted specifically to 10-30 degrees C, and the molar ratio of titanium halide compound to the mixed solvent is adjusted specifically to the value of titanium halide compound : mixed solvent = 1:3.0-1:10 in order to prevent the generation of precipitation and to make the shape of the carrier regular. When titanium halide is secondly added to the resultant by the first addition of a titanium halide, the shape of the carriers become regular thereby enhancing the bulk regularity of the resultant catalyst and yield of manufacturing the catalyst (refer to the paragraph [12]-[24] of the specification of the present PCT application.) This construction of the present invention and the resultant effect, however, are not disclosed in Yang et al. and are not obvious to those skilled in the art.

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While Yang et al. discloses that titanium halide compound and electron donor generally interact over two steps in step (iii) (corresponding to the step (3) of the present invention) of preparing a catalyst (Publication of Yang et al. , page 5, 3rd paragraph), this is not a construction for the step (ii) for preparing a carrier but for the step for preparing a final catalyst (the step (iii), which is a completely different form characteristic step (2) (corresponding to the step (ii) of Yang et al.). in the construction of the present invention wherein a carrier is prepared by adding titanium halide compound in two steps.

Accordingly, the characteristic step (2) of the present invention and the unexpected effect thereby are not disclosed ion Yang et al. Therefore, the present invention is not anticipated from Yang et al.. Based upon the comments and amendments above, the Applicant requests that the rejection be withdrawn with reference to Claims 1-3 and 5-6.

Accordingly, it is submitted that based upon the remarks above, Claims 1-3 and 5-6 are in condition for allowance.

Corresponding action is respectfully solicited.

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Respectfully submitted,

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